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TRANSPORTATION SYSTEM IN CHINA

By Regis Bergeron

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### TRANSPORTATION SYSTEM IN CHINA

[Following is the translation of an article by Regis Bergeron in Cahiers Franco-Chinois (Franco-Chinese Friendship Review) No. 7, Paris, September 1960, pages 41-52.]

When Dr. Sun Yat-sen in 1912, the year following the establishment of the Chinese Republic, conceived the vast plan of devoting his efforts as director of the Chinese railroads to the building of a rail network of some 160,000 kilometers, his ambition might have seemed singularly utopian. Indeed, the existing system did not exceed 8,600 kilometers. The fact is the country did not possess more than 21,000 kilometers of lines open to traffic until 1949. Thirty-eight years of disturbances, struggles among war lords and civil and foreign wars had hardly helped matters. The same very slow growth likewise affected the road system which, on the latter date, did not exceed 100,000 kilometers across that immense country of nearly ten million square kilometers of Asian continent.

Go into the Chinese countryside today; go through the streets of the large cities. Everywhere you will find the still visible signs of this age-old backwardness. Pictures on the printed page or on film have popularized the small panniers hanging from the two ends of the traditional carrying pole in which hundreds of thousands of dam and reservoir builders in present-day China transport earth and rock. It is perhaps less well known that there are more bicycles per square kilometer in every Chinese town than on the streets of Amsterdam, and these, furthermore, are of national manufacture and no longer imported -- push bikes with straight handlebars, motorless for the most part. Although only Hong Kong still uses the last, famous "rickshaws" of the exotic novel of bygone years, quite a few old tricycles still exist everywhere, on which panting, round-shouldered figures push along some old man or traveler just off the train and encumbered with baggage, or, more often, a load of vegetables or other provisions, plant or animal. Also classed as tricycles are those platforms on which are heaped incredible piles of vegetables or building materials. The streets are encumbered with these, as they are also with the convoys of carts, similar to the North African "arabas." These are drawn by mixed teams -- a donkey and a mule, or one of those wonderful little long-haired horses of the north -- reinforced at times by one or more men with braces. Human traction

still joins with animal to answer the growing needs of a country in the full swing of industrial and commercial development. Go northward and you will find caravans of camels or small donkeys, firm on their slender hoofs, carrying their enormous loads.

Look well on this sight; it will not be for long.

#### Road Transportation System

China now has its own automobile industry. Naturally, priority has been given to truck manufacture. The "Hung-chi-80" (Red Flag), the "Tung-feng-hung-54" (Red East), the "Ti-chiu-40" (The Globe), produced in the year of "the great leap forward" (1958), and trucks such as the "Liberation," are now mass produced, along with tractors for agriculture, for heavy construction and for transportation in rural areas.

With the growth of the automobile industry has naturally come tire production, which has grown spectacularly. in 1958 reaching 65 times the production figure of 1949.

But there must be roads for these new vehicles. From 1949 to 1958 -- dates constantly used for comparison -- the road system grew from 100,000 to 400,000 kilometers, while freight over the roads multiplied 30 times over the same period. At the same time, between 1952 and 1958, a reduction of 46% took place in the cost of road transport. For those unfamiliar with the detailed topography of China, it would doubtless be a tedious task to read the regional figures. But some of these demonstrate perfectly the progress made in this field. Not the least spectacular is assuredly the 12,000 kilometers of roads built across the "roof of the world" on the Tsinghai-Tibet plateau. Also noteworthy are the 800 kilometers of roads planned in 1958 for one district of Kwangtung (Tienpai), as well as all those over the mountains of most varied regions. Today these are used by vehicles of the latest model, after first being laid out by primitive vehicles, like those enumerated above, to which may be added, for example, the queer sort of big-wheeled Chinese wheelbarrow, with its axle in the center of the face plate.

As for the present time, let us limit ourselves to a single example. On 9 February 1960, the completion was announced of the construction, begun in July 1959, of a road around famous Koko Nor, the largest lake in China (4,200 square kilometers at 3,000 meters above sea level). This road is 449 kilometers long, of which 246 were constructed during the last seven months, the remainder having been entirely rebuilt. By facilitating transportation, this new road will promote fishing, the exploitation of lake products and the whole industry and economy of the region. We must also mention bridges, such as the one over the Tang-ho in Honan completed the first of this year after eight months of work, instead of the 18 months forecast, with the participation of 2,000 members of the people's communes of the region and about 100 specialists. Its 24 arches were built on the model of the famous Chao-chow bridge in Hopei, the world's first arch bridge, built 13 centuries ago. It will greatly facilitate road transportation in the southwest part of the province.

### River Transportation System

This bridge over the Tang-ho River, which in high water admits 5,000-ton ships under its central arch, reminds us that the rivers are an essential part of the transportation system of China.

Steamboats and barges in 1958 carried 14 times as much freight as in 1949. Nine years after the latter date, China had doubled the length of its navigable riverways, bringing the total to 150,000 kilometers. The ancient junks have also been improved by technical innovations, making their use more profitable than formerly. At the same time, the junks have found new waterways with the control of the most unmanageable river courses and the digging of numerous canals. These projects have multiplied through the mass efforts of the people's rural communes.

### Air Transportation System

Was it noticed in France that China participated in the First Conference on Civilian Aviation of the Socialist Countries, which opened at the beginning of last February? As young as it is, Chinese civilian aviation is thriving and is developing at an accelerated pace. Soviet aircraft, notably the celebrated TU-104 and the Ilyushin-18, equip most of the lines, but already the national airplane industry is producing, and not only the military jets, which, for the first time roared in the skies over Peking on the occasion of the great tenth anniversary festival of the People's Republic, 1 October 1959.

Briefly, Chinese airlines in 1958 covered 33,000 kilometers, planes in service were 4.3 times greater in number than in 1950, and the passenger and freight total for the same period had increased 13.6 times. Parenthetically, civilian aviation is sued not only for transport, but also in this continent-sized country for crop sowing, desert fertilization, the struggle against insects, prospecting for mineral resources, etc.

The most modern equipment on aircraft as well as in airports, such as in the recently completed large and commodious Peking airport, assures Chinese aviation a solid and secure reputation. Furthermore, in this country where, from north to south and from east to west, distances are counted by the thousands of kilometers, the plane is daily becoming a more usual means of transportation, all the more since the great difference between air and rail fares, still an obstacle with us to the popularization of plane travel, is non-existent. There are regions, moreover, which are most easily reached by plane. The recent opening of the Peking-Lhassa airline, which inspired the producers of the film "Flying Over the Roof of the World," as others were inspired by the opening of the Peking-Ulan Bator airline, represents a dazzling achievement by the young Chinese civilian aviation. To conclude, having just compared the figures of 1958 with those of 1950, let us add that since the "great leap forward" began in 1958, about 30 provincial and inter-province airlines have been opened. The latest is quite recent. On 12 February

1960, the announcement was made of the opening of the airline between Tientsin and Taiyuan, capital of Shansi. The new line, inaugurated on that day, linking the two largest industrial cities of Hopei and Shansi, includes as stop-over points Han-tang and Chang-ching, two of the great iron-producing centers of China.

### The Railroads

An article appearing in the May 1959 number of the Swiss review Technique et Commerce Est-Ouest (East-West Science and Trade) entitled "Who will supply the 20,000 miles of rails, etc. that China needs?" was calculated to arouse the curiosity of Western readers. Quoted in particular were the words of Mr. K. T. Vizer, sales manager of the English firm of Steel, Peach and Tozer: "China offers an almost unlimited market for all kinds of steel products . . . . The Chinese need to lay about 20,000 miles of rails within the framework of the Second Five-Year Plan, which means they must import all sorts of other railroad equipment."

It should be remembered that this figure is higher than the one given above -- 21,000 kilometers of railways open to traffic in 1949. It shows the gigantic effort of the last ten years to develop the system, all the more remarkable because in 1949 fully half of the railroads had been rendered unusable by the strife of several years. Already in 1958, the magnitude of the job was such that Chinese trains were rolling over 32,000 kilometers of track. For lovers of statistics, here are a few more of interest: for the three years 1957, 1958 and 1959, the volume of rail freight was respectively 270, 380 and 520 million tons (this last figure being 9.3 times that of 1949 and 3.8 times the pre-1949 peak figure). During the year of the "great leap forward" (1958) and of the "continued great leap" (1959) 6,759 new lines were built. During the last ten years, 313 kilometers of tunnels were bored and fitted out, and 239 kilometers of railroad bridges built. One which the Chinese are most proud of is the first major bridge over the Yangtze at Wuhan, which greatly facilitates north-south traffic and stimulates the national economy. Among the victories over nature, in which they take legitimate pride, the Chinese include the conquest of the Szechwan mountains, reputedly more difficult to cross than the road to Heaven. The builders of the Paochi to Chengtu line mastered these mountains, all the more brilliantly since the most precipitous part of the line from Pao-chi to Feng-Shien is being electrified, first step in the future general electrification of the Chinese rail system. Furthermore, the first prototypes of Chinese electric locomotives were produced during the year of the great leap forward. The factories of the country are presently putting out 15 types of locomotives and 60 types of passenger coaches and freight cars. Manufacture of locomotives in 1958 increased 50% over 1957 and of coaches and freight cars 100%. The two million Chinese railway workers seem to be determined, on the strength of their present schedule alone, to give a good account of themselves in fulfilling the Second Five-Year Plan, and to achieve renewed and substantial progress in

building the rail system. Except for Tibet, this system now extends into every province, autonomous region and settlement. Its future is written on the huge map prominently displayed at the Peking industrial exposition.

Furthermore, the figure of 32,000 kilometers for 1958 has since been greatly exceeded. In 1959, a number of new lines were opened, while double-tracking became systematized. This does not include the 8,200 kilometers of single track built by people's communes and local governments to fill the needs arising from the rapid development of industry and agriculture in the countryside. Once desolate regions, such as Yunnan, Szechwan and the autonomous Uighur region of Sinkiang, are now accessible by railroad. The new lines are notable for the pace and the quality of the construction. An important factor is the domestic manufacture of materials and equipment, recently still imported, such as pneumatic hammers, drills, etc.

Here are a few facts on the surpassed figure for 1958:

At the end of 1959, the Lan-chou to Sinkiang line was opened to traffic as far as Ha-mi (1,315 kilometers), and work is continuing at a rapid pace on 1,000 more kilometers from Ha-mi to Urumchi and from Urumchi to the Sino-Soviet frontier. Here, the greater part of the rail embankment is already finished and bridges and tunnels as well as stations have been staked out, pending laying of the rails. Three hundred kilometers of the stretch recently opened to traffic crosses an arid desert.

On 7 February 1960, the beginning of construction of a new line was announced. This is in the mountainous region of Kweichow, in southwest China, at an altitude of from 700 to 2,000 meters. That day likewise marked the first anniversary of the opening to traffic of the first railway connecting Kweichow with the neighboring autonomous kwang region of Kwangsi. These two lines constitute only a part of the job of building a rail network designed to connect this plateau with all the neighboring provinces. To accomplish this, high mountains and torrential streams must be crossed in these rural regions of animal traction (horses and oxen) and of wheelbarrows, and which have long suffered from poor communications.

Thirty thousand workers are now occupied with building the 259-kilometer stretch of new line from Kweichow eastward toward Hunan. It is to make junction with the Peiping-Canton line near Hsiang-tan, thriving industrial city of Hunan, and, to the south, with the Kweichow-Kwangsi line at Tao-yuan. In fact, four sections in all are under construction. In addition to the two just mentioned, a third will run northward toward Szechwan and a fourth toward Yunnan to the west. Kweiyang, capital of Kweichow, will become the pivot of this network reaching out in all four directions, and from which a fundamental industrial, agricultural and commercial transformation of the province is anticipated. One third of the total construction investment in 1960 in the province is earmarked for railways. It is believed all 306 kilometers of the Kweichow-Szechwan line will be quickly finished, following the announcement on 13 February 1960 that the last of 65 tunnels on the line had been completed three days earlier. End to end these tunnels amount to 27 kilometers. The

longest, built during the summer of 1959 through the Lu-shan mountains, covers four kilometers, 270 meters. This line stretches from Chungking to Kweiyang, the largest industrial center in southwest China. Each kilometer of embankment (three-fourths of which is completed) required 12,000 cubic meters of rock and earth. In addition to the 65 tunnels, 67 bridges were built.

The latest to be completed is the second bridge over the Yangtze at Chungking, the first being at Wuhan. The Chungking bridge has a double railway track. Work was begun in 1958 and took 14 months, instead of the planned two years. The labor used was only one-fifth of that required to build the Wuhan bridge. The steel girders along its 820-meter length were forged at the specialized factory of Shan-Hai-Kwan. This bridge is now the principal artery for both Szechwan and Kweichow, permitting service on the whole length of the Szechwan-Kweichow railway, and helps connect Chengru and Chungking with the north. All sections of these two lines have been completed so that there are now two continuous lines bringing improved communications between these provinces. The southwest is now closely linked to the other provinces, and its economic prosperity is promoted more closely in communication with the distant conflicts in southwest China. Finally, the obstacle of the great river, which so long hindered the building of the Szechwan-Kweichow line, has been overcome. The transportation of natural resources, such as coffee, iron, different minerals (from Kweichow and southeast Szechwan to Chung-king) and, in the opposite direction, the transportation of mechanical equipment and materials necessary to the development of these provinces, had formerly to be effected by a tour of almost half of China, that is, by the Chengtu-Chungking, Pao-chi to Chengtu railroads and other lines, or half by wooden boats on the Yangtze, or half by the Peking-Canton and Kweichow-Kwangsi railroads. Chungking has now become the intersecting point of this new communications network, which effectively combines rail with river transportation. But already the new bridge is considered inadequate because of the rapid development of these regions. In the very near future a new large bridge will be built at Chungking, more accurately at I-Kang-Yin, connecting the Chengtu-Chungking and Szechwan-Hunan lines, the latter of which will be started very soon. Still other bridges are planned at various points on the Yangtze.

Hardly a day goes by without publication in China of a news report on the progress achieved in this field. On 18 February 1960 it was announced that new sections of track were being completed on one of the two lines joining Szechuan and Yunnan. This is the Hei-chiang to Kunming line, which will cover 789 kilometers when completed. Six days earlier it was learned that construction of a large locomotive factory was begun at Lan-chou in northwest China. This is to be the largest in the region, putting out, particularly, internal combustion locomotives, especially designed for desert regions.

It will be easily seen from these few indications that the efforts and successes have been considerable. In 1958, however, a certain

"tension," as the Chinese say, appeared in the field of transportation, and although this tension was greatly attenuated in 1959, thanks to these efforts and successes, transportation and communications continue to be regarded as one of the weak sectors in the general development of the national economy. Particular attention, therefore, will be given to this sector in the planning for 1960. Everywhere accent is placed on the necessity for developing railways, for building more main lines, as well as more lines laid out with primitive methods, for multiplying, along with the principal main lines, direct and branch lines leading to the large industrial combines. One of the essential problems is to assure the transportation of coal and of minerals which are being mined at a constantly accelerated pace. The trend is also toward substitution of heavy by light rails and toward increased manufacture of freight cars and locomotives.

These multiple exigencies offer a vast field of action to the ingenuity and industriousness of the Chinese.

A typical example is offered by the members of the people's communes of the Shang-kuo district of Honan, who laid 3,100 kilometers of wooden rails. These are of local manufacture, as are the wooden freight cars running on these rails, and which handle 75% of the transportation of vegetables from the fields to the villages. Animal traction is used to move convoys of six cars containing eight tons of manure, thereby multiplying transport effectiveness by 20. Along with this innovation in two communes of the district, farm factories have produced gas-engine locomotives capable of drawing a load of ten tons. One of these communes occupies 5,000 hectares of ground. Since the innovations in transport methods, the conveyance of manure is accomplished in one week instead of two months, with the help of 3,000 men. In this way, 75 tons of manure per hectare can be given instead of the planned 45 tons. These "railroads" now connect all the villages of the district with each other and with the chief town, as well as with ports and road junctions. They likewise carry out short distance transport. The rails are laid on a brick bed, the communes themselves producing all the equipment and materials. Nothing could be farther from fiction than these examples. They belong to the great mass movement for extending the transportation system, stressed by Minister of Communications Wang Shuo-tao in Jen-min Jih-pao (People's Daily) of 19 February 1960. He extoled the participation of the People's communes in this extension, indicating that they have created 50,000 specialized transport brigades and 70,000 others of the same kind, but working part time.

In this article, the Chinese minister quoted figures of 480,000 kilometers for the road network and 160,000 kilometers for navigable waters (a quarter of which are open to steamships) existing at the beginning of 1960. He recalled the orientation for 1959, stressing that it is still valid, namely, the transportation system is not to be considered the exclusive business of the transportation department. A better coordination has been established between the latter and the production and commerce departments. According to the minister, the task for 1960

consists, then, in achieving a "continuous leap forward" in transportation, in improving equipment by semi-mechanization and mechanization in accord with local conditions, in building a large number of new roads, in reaching a higher average speed for vehicles, in developing water transport by widening navigation canals and by using irrigation canals, and in building more boats and vehicles so as to eliminate burdens on the shoulders or backs of men. Mr. Wang Shuo-tao added, finally, that in the people's communes the transportation brigades should become base units for short distance transport. The three departments (transportation, production and commerce) should in any case continue to strengthen their collaboration and pursue a campaign of competition to improve the efficiency of the existing means of transportation.

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